

TOMS AND THE NOAA/FAA VOLCANO SUPPORT PLAN

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Volcanic eruptions pose several hazards to aircraft encountering the resultant ash cloud. These include windshield pitting, abrasion of exposed parts, erosion of compressor blades, and oil system contamination. During two of the 1982 eruptions of Galunggung volcano in Indonesia, two Boeing 747's which inadvertently flew through the ash cloud suffered multiple engine failures. Because many air routes traverse volcanic areas (e.g., Alaska, Japan, Indonesia), information on volcanic eruptions and ash clouds is important to aviation authorities so aircraft can be rerouted out of the area. Nocturnal eruptions are especially dangerous to aircraft. Visual sighting is difficult and onboard radar is not designed to detect the small ash cloud particulates.

At the request of the Federal Aviation Administration (FAA), the National Oceanic and Atmospheric Administration (NOAA) has prepared a plan for supporting the FAA during volcanic eruptions. The plan utilizes NOAA satellites data and trajectory analysis. Because current operational satellite sensors cannot unambiguously distinguish volcanic eruptions from meteorological clouds, the plan is designed to react to known eruptions rather than detect eruptions. However, the TOMS instrument has been used to unambiguously detect sulfur dioxide clouds from volcanic eruptions regardless of cloudiness. If TOMS was flown on an operational NOAA satellite, NOAA would have an automated volcanic eruption detection system which could more effectively support the FAA.